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NASHVILLE, TENNESSEE 37243-0435

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August 23, 2019

**Via Electronic Mail to [cdelahoyde@naseo.org](mailto:cdelahoyde@naseo.org)**

Campbell Delahoyde, Program Manager  
National Association of State Energy Officials  
1300 North 17th Street, Suite 1275  
Arlington, Virginia 22209

RE: Requests for Information on Codes, Standards, Specifications, and Other Guidance for  
Enhancing the Resilience of Electric and Oil and Natural Gas Infrastructure Systems

Dear Mr. Delahoyde:

The Tennessee Department of Environment and Conservation (TDEC) appreciates the opportunity to provide comments to the National Association of State Energy Officials (NASEO) regarding the U.S. Department of Energy (DOE) Requests for Information (RFI) on codes, standards, specifications, and other guidance for enhancing the resilience of electric and oil and natural gas infrastructure systems. DOE has issued two separate RFIs to gather available information on current consensus-based codes, specifications, standards, and less formal forms of guidance for improving the resilience of electric and oil and natural gas infrastructure against severe weather events, with respect to both the design and operation of these systems. The information of interest ranges from (1) specific technical design standards or requirements for physical system components; (2) relevant corporate business practices<sup>1</sup>; and (3) analytic methods and tools for estimating the possible economic benefits from strategies, investments, or initiatives to enhance the resilience of relevant facilities. DOE anticipates using this information to catalogue and synthesize a body of existing expert knowledge about how best to enhance the resilience of these systems cost-effectively. The concept of resilience is integrally linked to TDEC's mission to enhance the quality of life for citizens of Tennessee and to be stewards of our natural environment.

TDEC has reviewed the RFIs and provides the following comments and examples to NASEO for consideration of inclusion in the organization's letter to DOE:

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<sup>1</sup> In example, "oil and natural gas companies should designate a senior corporate officer responsible for the development, implementation, and ongoing maintenance of a companywide resilience strategy."

## RFI for Electric Infrastructure Systems<sup>2</sup>

### Relevant Corporate Business Practices

- Similar to the Integrated Resource Planning (IRP) process used by utilities to determine longer-term generation and transmission needs, a Distribution Resource Planning (DRP) process can create more resilient local electrical distribution networks by identifying, addressing, and mitigating threats at the local level. In order to be responsive to enhancing resilience, a DRP could address threats such as increasing frequency and severity of weather-related (e.g., flooding, wildfires, and hurricanes) and man-made events. TDEC recommends DOE provide guidance on conducting utility scale DPRs and including in that guidance specific mention of addressing threats relating to weather- and man-made events.
- TDEC encourages DOE to consider the benefit of distributed energy resources (DER) and microgrids, including rooftop solar, battery storage, and combined heat and power. In particular, if the financial benefits of operating on the grid can be combined with resilience benefits, DER could expand significantly. However, the financial and resilience benefits are often viewed independently by management, which harms the business case and decreases the probability of being implemented. One strategy which may make sense is monetizing the benefits of resilience or conversely the costs of inaction for the purposes of communicating with management.
- TDEC encourages DOE to consider the benefits of the intersection of transportation and the electrical grid. By 2030, the Edison Electric Institute projects over 18 million electric vehicles (EVs) will be on US roads, making a significant share of our nation's transportation network dependent on the electric grid. Since EVs have large batteries, this presents a unique opportunity to make the electrical grid even more resilient with millions of distributed battery storage devices.
- All buildings housing critical grid infrastructure that are located in areas designated as Seismic Design Categories C through F should be retrofitted to meet seismic building code requirements of the 2018 International Building Code regardless of building age. For example, structurally hardening masonry switch houses in seismic zones will reduce outages during earthquakes. TDEC encourages DOE to consider this for codes or as a best practice.
- Replacement equipment for critical components should be required to be inventoried and located on-site or within a previously established network or region in order to reduce replacement time post-incident. Equipment standardization across a power company's network can enable faster restoration after losing major electrical substations. For instance, TVA transitioned to steel poles in the 1990s and has created specifications for its own standard transmission pole; this design specification allows

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<sup>2</sup> 99.7% of Tennessee is served by the Tennessee Valley Authority (TVA), a federally-owned corporation. TVA is self-regulated with regard to certain aspects of its operations. Specifically, the State of Tennessee does not regulate TVA's generation mix, transmission and other infrastructure, and utility rates. TVA serves and regulates Local Power Companies who distribute electricity to homes and businesses in their respective geographies. TVA has several policies and programs in place to increase their grid resiliency. TDEC recommends DOE contact Mr. Ian Grant, TVA Planning Coordinator, [isgrant@tva.gov](mailto:isgrant@tva.gov), for further discussion regarding information on electric sector infrastructure resilience.

TVA to establish contracts with multiple vendors to manufacture these poles and reduces the potential of a supply chain failure. TDEC encourages DOE to provide guidance or best practice examples/case studies that relay the value and importance of standardization and replacement inventorying.

- TDEC encourages DOE and U.S. Department of Transportation to create a working group to examine federal statutes and policies that may inhibit rapid deployment of extremely heavy equipment such as replacement transformers during an emergency.

### **Analytic methods and tools for estimating benefits**

- The Federal Emergency Management Agency's (FEMA) Benefit Cost Analysis (BCA) tool<sup>3</sup> uses widely accepted standards to place value on preventing the loss of electric service and routinely shows projects preventing electric outages, even for only a day, are cost effective with beneficial financial outcomes. Developing a similar, simpler version of the tool may help DOE internally assess the benefits of resilient projects; however, DOE should avoid using the high discount rate of seven percent that FEMA requires in measuring a project's value over the project's useful life.

### **RFI for Oil and Natural Gas Infrastructure**

#### **Relevant Corporate Business Practices**

- All equipment and control systems components in a pipeline network should be identified and ranked for criticality. The criticality metric should rank equipment based on necessity for continued operations, availability of replacement, and lead time of replacement equipment manufacture. Potential replacement equipment and necessary supply chains should be required to be identified, located, and recorded for all components deemed most critical. Control systems deemed most critical should be required to have on-site backup power with the ability to continuously operate off-grid. To increase resiliency, TDEC recommends the backup power supply should have dual-fuel capabilities.
- All buildings housing critical pipeline infrastructure that are located in areas designated as Seismic Design Categories C through F should be retrofitted to meet seismic building code requirements of the 2018 International Building Code regardless of building age. For example, structurally hardening masonry in structures housing compressor stations in seismic zones will reduce outages during earthquakes. TDEC encourages DOE to consider this for codes or as a best practice.

It is TDEC's understanding that NASEO will consider these comments as part of a comment letter to DOE, reflecting the input from the state of Tennessee and other state energy offices. TDEC appreciates the opportunity to provide comments on the DOE RFIs. Please contact me should you have any questions regarding these comments.

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<sup>3</sup> For more information on FEMA's BCA Tool, please visit <https://www.fema.gov/benefit-cost-analysis>.

Sincerely,

*Kendra Abkowitz*

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